

## WEST Search History

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DATE: Sunday, June 11, 2006

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| <input type="checkbox"/> | L4       | sulfolobales same L3                                      | 2         |
| <input type="checkbox"/> | L3       | trehalose same L1   | 263       |
| <input type="checkbox"/> | L2       | sulfolobales same L1                                      | 5         |
| <input type="checkbox"/> | L1       | amylase   | 30353     |

END OF SEARCH HISTORY

=> index bioscience medicine

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=> s amylase

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6 FILE PHARMAML  
119 FILE PHIN  
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18062 FILE SCISEARCH

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16446 FILE USPATFULL  
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6115 FILE WPINDEX  
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328 FILE NLDB

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L1 QUE AMYLASE

=> d rank

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F2 28486 BIOSIS  
F3 21517 DGENE  
F4 19103 GENBANK  
F5 18062 SCISEARCH  
F6 16532 EMBASE  
F7 16446 USPATFULL  
F8 16181 MEDLINE  
F9 11389 PASCAL  
F10 10384 CABA  
F11 9050 TOXCENTER  
F12 6744 FSTA  
F13 6627 JICST-EPLUS  
F14 6115 WPIDS  
F15 6115 WPINDEX  
F16 5932 BIOTECHABS  
F17 5932 BIOTECHDS  
F18 4815 ESBIOBASE  
F19 4622 AGRICOLA  
F20 4582 LIFESCI  
F21 4131 BIOTECHNO  
F22 3310 IFIPAT  
F23 3088 FROSTI  
F24 2418 DRUGU  
F25 2194 BIOENG

=> file f1-f2, f5-f11, f14, f19

FILE 'CAPLUS' ENTERED AT 19:38:19 ON 11 JUN 2006  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
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FILE 'AGRICOLA' ENTERED AT 19:38:19 ON 11 JUN 2006

=> s L1

L2 182875 L1

=> s trehalose(s)L2

L3 455 TREHALOSE(S) L2

=> s sulfolobus (s)L3

L4 46 SULFOLOBUS (S) L3

=> dup rem L4

PROCESSING COMPLETED FOR L4

L5 27 DUP REM L4 (19 DUPLICATES REMOVED)

=> s sulfolobales (s)L4

L6 2 SULFOLOBALES (S) L4

=> s L5 (s)L6

L7 2 L5 (S) L6

=> d ibib abs L5 1-27

L5 ANSWER 1 OF 27 USPATFULL on STN

ACCESSION NUMBER: 2006:113827 USPATFULL <<LOGINID::20060611>>

TITLE: Nucleic acid and amino acid sequences relating to

Enterobacter cloacae for diagnostics and therapeutics

INVENTOR(S): Weinstock, Keith G., Westborough, MA, UNITED STATES

Deloughery, Craig, Medford, MA, UNITED STATES

Bush, David, Somerville, MA, UNITED STATES

PATENT ASSIGNEE(S): Genome Therapeutics Corporation, Waltham, MA, UNITED STATES (U.S. corporation)

NUMBER KIND DATE

PATENT INFORMATION: US 7041814 B1 20060509

APPLICATION INFO.: US 1999-252691 19990218 (9)

NUMBER DATE

PRIORITY INFORMATION: US 1998-94145P 19980724 (60)

US 1998-74787P 19980218 (60)

DOCUMENT TYPE: Utility

FILE SEGMENT: GRANTED

PRIMARY EXAMINER: Smith, Lynette R. F.

ASSISTANT EXAMINER: Portner, Ginny Allen

LEGAL REPRESENTATIVE: Buchanan Ingersoll PC

NUMBER OF CLAIMS: 9

EXEMPLARY CLAIM: 1

LINE COUNT: 19563

AB The invention provides isolated polypeptide and nucleic acid sequences derived from *Enterobacter cloacae* that are useful in diagnosis and therapy of pathological conditions; antibodies against the polypeptides; and methods for the production of the polypeptides. The invention also provides methods for the detection, prevention and treatment of pathological conditions resulting from bacterial infection.

L5 ANSWER 2 OF 27 USPATFULL on STN  
ACCESSION NUMBER: 2005:299054 USPATFULL <<LOGINID::20060611>>  
TITLE: Method of producing saccharide preparations  
INVENTOR(S): Liaw, Gin C., Decatur, IL, UNITED STATES  
Pedersen, Sven, Gentofte, DENMARK  
Hendriksen, Hanne Vang, Holte, DENMARK  
Svendsen, Allan, Birkerød, DENMARK  
Nielsen, Bjarne Ronfeldt, Virum, DENMARK  
Nielsen, Ruby Illum, Farum, DENMARK  
PATENT ASSIGNEE(S): Novozymes A/S, Bagsvaerd, DENMARK (non-U.S.  
corporation)

NUMBER KIND DATE  
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PATENT INFORMATION: US 2005260719 A1 20051124  
APPLICATION INFO.: US 2003-646283 A1 20030821 (10)  
RELATED APPLN. INFO.: Continuation of Ser. No. US 2001-908395, filed on 18  
Jul 2001, ABANDONED Continuation of Ser. No. US  
2000-632392, filed on 4 Aug 2000, GRANTED, Pat. No. US  
6303346 Continuation of Ser. No. US 2000-499531, filed  
on 10 Feb 2000, GRANTED, Pat. No. US 6136571  
Continuation of Ser. No. US 1998-198672, filed on 23  
Nov 1998, GRANTED, Pat. No. US 6129788  
Continuation-in-part of Ser. No. US 1998-107657, filed  
on 30 Jun 1998, ABANDONED Continuation-in-part of Ser.  
No. US 1997-979673, filed on 26 Nov 1997, ABANDONED  
DOCUMENT TYPE: Utility  
FILE SEGMENT: APPLICATION  
LEGAL REPRESENTATIVE: NOVOZYMES NORTH AMERICA, INC., 500 FIFTH AVENUE, SUITE  
1600, NEW YORK, NY, 10110, US  
NUMBER OF CLAIMS: 11  
EXEMPLARY CLAIM: 1-91  
NUMBER OF DRAWINGS: 5 Drawing Page(s)  
LINE COUNT: 1205  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention relates to a method for the production of  
saccharide preparations, i.e., syrups, by saccharifying a liquefied  
starch solution, which method comprises a saccharification step during  
which step one or more enzymatic saccharification stages takes place,  
and the subsequent steps of one or more high temperature membrane  
separation steps, and recirculation of the saccharification enzyme, in  
which method the membrane separation steps are carried out as an  
integral part of the saccharification step. In another specific aspect,  
the invention provides a method of producing a saccharide preparation,  
which method comprises an enzymatic saccharification step, and the  
subsequent steps of one or more high temperature membrane separation  
steps and re-circulation of the saccharification enzyme.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 3 OF 27 USPATFULL on STN  
ACCESSION NUMBER: 2005:4316 USPATFULL <<LOGINID::20060611>>  
TITLE: Glycosyl hydrolases  
INVENTOR(S): Breves, Roland, Mettmann, GERMANY, FEDERAL REPUBLIC OF  
Maurer, Karl-Heinz, Erkrath, GERMANY, FEDERAL REPUBLIC  
OF  
Eck, Jurgen, Heppenheim, GERMANY, FEDERAL REPUBLIC OF  
Lorenz, Patrick, Lorsch, GERMANY, FEDERAL REPUBLIC OF  
Zinke, Holger, Zwingenberg, GERMANY, FEDERAL REPUBLIC  
OF

NUMBER KIND DATE  
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PATENT INFORMATION: US 2005003419 A1 20050106  
APPLICATION INFO.: US 2004-872874 A1 20040621 (10)  
RELATED APPLN. INFO.: Continuation of Ser. No. WO 2002-EP14210, filed on 13  
Dec 2002, UNKNOWN

NUMBER DATE  
-----

PRIORITY INFORMATION: DE 2001-10163748 20011221  
DOCUMENT TYPE: Utility  
FILE SEGMENT: APPLICATION  
LEGAL REPRESENTATIVE: WOODCOCK WASHBURN LLP, ONE LIBERTY PLACE, 46TH FLOOR,  
PHILADELPHIA, PA, 19103

NUMBER OF CLAIMS: 21  
EXEMPLARY CLAIM: 1  
NUMBER OF DRAWINGS: 16 Drawing Page(s)  
LINE COUNT: 7298

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention relates to a new glycosyl hydrolases with an amylolytic activity and nucleic acids coding for said glycosyl hydrolases, A PCR-based method for identifying and preparing new glycosyl hydrolases from metagenome DNA and several possible technical uses for such glycosyl hydrolases with an amylolytic activity. Washing and cleaning products containing such enzymes, and methods and possible uses corresponding thereto are particularly interesting.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 4 OF 27 USPATFULL on STN  
ACCESSION NUMBER: 2004:227428 USPATFULL <<LOGINID::20060611>>  
TITLE: Novel transferase and amylase, process for producing  
the enzymes, use thereof, and gene coding for the same  
INVENTOR(S): Kato, Masaru, Takasaki-shi, JAPAN  
Miura, Yutaka, Takasaki-shi, JAPAN  
Kettoku, Masako, Takasaki-shi, JAPAN  
Iwamatsu, Akihiro, Yokohama-shi, JAPAN  
Kobayashi, Kazuo, Takasaki-shi, JAPAN  
Komeda, Toshihiro, Yokohama-shi, JAPAN  
PATENT ASSIGNEE(S): KIRIN BEER KUBUSHIKI KAISHA (non-U.S. corporation)

NUMBER KIND DATE

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PATENT INFORMATION: US 2004175814 A1 20040909  
APPLICATION INFO.: US 2003-688276 A1 20031020 (10)  
RELATED APPLN. INFO.: Continuation of Ser. No. US 2000-695423, filed on 25  
Oct 2000, ABANDONED Continuation of Ser. No. US  
1999-298924, filed on 26 Apr 1999, GRANTED, Pat. No. US  
6391595 Division of Ser. No. US 1997-750569, filed on  
24 Feb 1997, PENDING A 371 of International Ser. No. WO  
1995-JP1189, filed on 14 Jun 1995, UNKNOWN

NUMBER DATE

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PRIORITY INFORMATION: JP 1994-133354 19940615  
JP 1994-194223 19940818  
JP 1994-290394 19941031  
JP 1994-286917 19941121  
JP 1994-311185 19941121  
JP 1995-120673 19950421

DOCUMENT TYPE: Utility  
FILE SEGMENT: APPLICATION  
LEGAL REPRESENTATIVE: FOLEY AND LARDNER, SUITE 500, 3000 K STREET NW,  
WASHINGTON, DC, 20007

NUMBER OF CLAIMS: 145  
EXEMPLARY CLAIM: 1  
NUMBER OF DRAWINGS: 44 Drawing Page(s)  
LINE COUNT: 6978

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides a novel transferase that acts on a saccharide, as a substrate, composed of at least three sugar units wherein at least three glucose residues on the reducing end are linked .alpha.-1,4 so as to transfer the .alpha.-1,4 linkages to a .alpha.-1,.alpha.-1 linkages; a process for producing the transferase; a gene coding for the same; and a process for producing an oligosaccharide by using the same. Also provided are a novel amylase that has a principal activity of acting on a saccharide, as a substrate, composed of at least three sugar units wherein at least three sugar units on the reducing end side are glucose units and the linkage between the first and the second glucose units is

.alpha.-1,.alpha.-1 while the linkage between the second and the third glucose units is .alpha.-1,4 so as to liberate .alpha.,.alpha.-trehalose by hydrolyzing the .alpha.-1,4 linkage and another activity of hydrolyzing the .alpha.-1,4 linkage within the molecular chain of the substrate and that liberates disaccharides and/or monosaccharides as the principal final products; a process for producing the amylase; a gene coding for the same; and a process for producing .alpha.,.alpha.-trehalose by using a combination of the transferase and the amylase.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 5 OF 27 USPATFULL on STN

ACCESSION NUMBER: 2002:343879 USPATFULL <<LOGINID::20060611>>

TITLE: Novel Polynucleotides

INVENTOR(S): Nakagawa, Satoshi, Tokyo, JAPAN

Mizoguchi, Hiroshi, Tokyo, JAPAN

Ando, Seiko, Tokyo, JAPAN

Hayashi, Mikiro, Tokyo, JAPAN

Ochiai, Keiko, Tokyo, JAPAN

Yokoi, Haruhiko, Tokyo, JAPAN

Tateishi, Naoko, Tokyo, JAPAN

Senoh, Akihiro, Tokyo, JAPAN

Ikeda, Masato, Tokyo, JAPAN

Ozaki, Akio, Hofu-shi, JAPAN

NUMBER KIND DATE

PATENT INFORMATION: US 2002197605 A1 20021226

APPLICATION INFO.: US 2000-738626 A1 20001218 (9)

NUMBER DATE

PRIORITY INFORMATION: JP 1999-377484 19991216

JP 2000-159162 20000407

JP 2000-280988 20000803

DOCUMENT TYPE: Utility

FILE SEGMENT: APPLICATION

LEGAL REPRESENTATIVE: NIXON & VANDERHYE P.C., 8th Floor, 1100 North Glebe Road, Arlington, VA, 22201

NUMBER OF CLAIMS: 68

EXEMPLARY CLAIM: 1

NUMBER OF DRAWINGS: 4 Drawing Page(s)

LINE COUNT: 13673

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Novel polynucleotides derived from microorganisms belonging to coryneform bacteria and fragments thereof, polypeptides encoded by the polynucleotides and fragments thereof, polynucleotide arrays comprising the polynucleotides and fragments thereof, recording media in which the nucleotide sequences of the polynucleotide and fragments thereof have been recorded which are readable in a computer, and use of them.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 6 OF 27 USPATFULL on STN

ACCESSION NUMBER: 2002:294680 USPATFULL <<LOGINID::20060611>>

TITLE: Method of producing saccharide preparations

INVENTOR(S): Liaw, Gin C., Decatur, IL, UNITED STATES

Pedersen, Sven, Gentofte, DENMARK

Hendriksen, Hanne Vang, Holte, DENMARK

Svendsen, Allan, Birkerod, DENMARK

Nielsen, Bjarne Ronfeldt, Virum, DENMARK

Nielsen, Rudy Illum, Farum, DENMARK

PATENT ASSIGNEE(S): Novozymes A/S, Bagsvaerd, DENMARK, DK-2880 (non-U.S. corporation)

NUMBER KIND DATE

PATENT INFORMATION: US 2002164723 A1 20021107

APPLICATION INFO.: US 2001-908395 A1 20010718 (9)

RELATED APPLN. INFO.: Continuation of Ser. No. US 2000-632392, filed on 4 Aug

2000, GRANTED, Pat. No. US 6303346 Continuation of Ser.  
No. US 2000-499531, filed on 10 Feb 2000, GRANTED, Pat.  
No. US 6136571 Continuation of Ser. No. US 1998-198672,  
filed on 23 Nov 1998, GRANTED, Pat. No. US 6129788  
Continuation-in-part of Ser. No. US 1998-107657, filed  
on 30 Jun 1998, ABANDONED Continuation-in-part of Ser.  
No. US 1997-979673, filed on 26 Nov 1997, ABANDONED

DOCUMENT TYPE: Utility  
FILE SEGMENT: APPLICATION  
LEGAL REPRESENTATIVE: NOVOZYMES NORTH AMERICA, INC., 500 FIFTH AVENUE, SUITE  
1600, NEW YORK, NY, 10110

NUMBER OF CLAIMS: 91  
EXEMPLARY CLAIM: 1  
NUMBER OF DRAWINGS: 5 Drawing Page(s)  
LINE COUNT: 1477

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention relates to a method for the production of  
saccharide preparations, i.e., syrups, by saccharifying a liquefied  
starch solution, which method comprises a saccharification step during  
which step one or more enzymatic saccharification stages takes place,  
and the subsequent steps of one or more high temperature membrane  
separation steps, and re-circulation of the saccharification enzyme, in  
which method the membrane separation steps are carried out as an  
integral part of the saccharification step.

In another specific aspect, the invention provides a method of producing  
a saccharide preparation, which method comprises an enzymatic  
saccharification step, and the subsequent steps of one or more high  
temperature membrane separation steps and re-circulation of the  
saccharification enzyme.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 7 OF 27 USPATFULL on STN  
ACCESSION NUMBER: 2002:116032 USPATFULL <<LOGINID::20060611>>  
TITLE: Transferase and amylase, process for producing the  
enzymes, use thereof, and gene coding for the same  
INVENTOR(S): Kato, Masaru, Takasaki, JAPAN  
Miura, Yutaka, Takasaki, JAPAN  
PATENT ASSIGNEE(S): Kirin Beer Kabushiki Kaisha, Tokyo, JAPAN (non-U.S.  
corporation)

NUMBER KIND DATE

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PATENT INFORMATION: US 6391595 B1 20020521  
APPLICATION INFO.: US 1999-298924 19990426 (9)  
RELATED APPLN. INFO.: Division of Ser. No. US 750569

NUMBER DATE

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PRIORITY INFORMATION: JP 1994-133354 19940615  
JP 1994-194223 19940818  
JP 1994-290394 19941031  
JP 1994-286917 19941121  
JP 1994-311185 19941121  
JP 1995-120673 19950421

DOCUMENT TYPE: Utility  
FILE SEGMENT: GRANTED  
PRIMARY EXAMINER: Achutamurthy, Ponnathapu  
ASSISTANT EXAMINER: Rao, Manjunath N.  
LEGAL REPRESENTATIVE: Foley & Lardner  
NUMBER OF CLAIMS: 38  
EXEMPLARY CLAIM: 1  
NUMBER OF DRAWINGS: 51 Drawing Figure(s); 44 Drawing Page(s)  
LINE COUNT: 5088

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides a novel transferase that acts on a saccharide, as  
a substrate, composed of at least three sugar units wherein at least  
three glucose residues on the reducing end are linked .alpha.-1,4 so as  
to transfer the .alpha.-1,4 linkages to a .alpha.-1,.alpha.-1 linkages;

a process for producing the transferase; a gene coding for the same; and a process for producing an oligosaccharide by using the same. Also provided are a novel amylase that has a principal activity of acting on a saccharide, as a substrate, composed of at least three sugar units wherein at least three sugar units on the reducing end side are glucose units and the linkage between the first and the second glucose units is .alpha.-1,.alpha.-1 while the linkage between the second and the third glucose units is .alpha.-1,4 so as to liberate .alpha.,.alpha.-trehalose by hydrolyzing the .alpha.-1,4 linkage and another activity of hydrolyzing the .alpha.-1,4 linkage within the molecular chain of the substrate and that liberates disaccharides and/or monosaccharides as the principal final products; a process for producing the amylase; a gene coding for the same; and a process for producing .alpha.,.alpha.-trehalose by using a combination of the transferase and the amylase.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 8 OF 27 USPATFULL on STN

ACCESSION NUMBER: 2001:178850 USPATFULL <<LOGINID::20060611>>

TITLE: Method of producing saccharide preparations

INVENTOR(S): Liaw, Gin C., Decatur, IL, United States

Pedersen, Sven, Gentofte, Denmark

Hendriksen, Hanne Vang, Holte, Denmark

Svendsen, Allan, Birkerød, Denmark

Nielsen, Bjarne Røsneldt, Virum, Denmark

Nielsen, Ruby Illum, Farum, Denmark

PATENT ASSIGNEE(S): Novozymes A/S, Bagsvaerd, Denmark (non-U.S. corporation)

NUMBER KIND DATE

PATENT INFORMATION: US 6303346 B1 20011016

APPLICATION INFO.: US 2000-632392 20000804 (9)

RELATED APPLN. INFO.: Continuation of Ser. No. US 2000-499531, filed on 10

Feb 2000, now patented, Pat. No. US 6136571

Continuation of Ser. No. US 1998-198672, filed on 23

Nov 1998, now patented, Pat. No. US 6129788

Continuation-in-part of Ser. No. US 1998-107657, filed

on 30 Jun 1998, now abandoned Continuation-in-part of

Ser. No. US 1997-979673, filed on 26 Nov 1997, now

abandoned

DOCUMENT TYPE: Utility

FILE SEGMENT: GRANTED

PRIMARY EXAMINER: Brunsman, David

LEGAL REPRESENTATIVE: Lambiris, Elias J., Garbell, Jason I.

NUMBER OF CLAIMS: 10

EXEMPLARY CLAIM: 1,5,8

NUMBER OF DRAWINGS: 5 Drawing Figure(s); 5 Drawing Page(s)

LINE COUNT: 1032

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention relates to a method for the production of saccharide preparations, i.e., syrups, by saccharifying a liquefied starch solution, which method comprises a saccharification step during which step one or more enzymatic saccharification stages takes place, and the subsequent steps of one or more high temperature membrane separation steps, and re-circulation of the saccharification enzyme, in which method the membrane separation steps are carried out as an integral part of the saccharification step. In another specific aspect, the invention provides a method of producing a saccharide preparation, which method comprises an enzymatic saccharification step, and the subsequent steps of one or more high temperature membrane separation steps and re-circulation of the saccharification enzyme.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 9 OF 27 USPATFULL on STN

ACCESSION NUMBER: 2000:157207 USPATFULL <<LOGINID::20060611>>

TITLE: Thermostable trehalose-releasing enzyme

INVENTOR(S): Ikegami, Shouji, Okayama, Japan

Kubota, Michio, Okayama, Japan

Sugimoto, Toshiyuki, Okayama, Japan  
Miyake, Toshio, Okayama, Japan  
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo,  
Okayama, Japan (non-U.S. corporation)

NUMBER KIND DATE

-----  
PATENT INFORMATION: US 6150153 20001121  
APPLICATION INFO.: US 1997-888158 19970703 (8)  
RELATED APPLN. INFO.: Continuation of Ser. No. US 1995-485132, filed on 7 Jun  
1995, now patented, Pat. No. US 5723327

NUMBER DATE

-----  
PRIORITY INFORMATION: JP 1994-166126 19940625  
JP 1995-109130 19950411

DOCUMENT TYPE: Utility  
FILE SEGMENT: Granted  
PRIMARY EXAMINER: Prats, Francisco  
LEGAL REPRESENTATIVE: Browdy and Neimark  
NUMBER OF CLAIMS: 1  
EXEMPLARY CLAIM: 1  
NUMBER OF DRAWINGS: 5 Drawing Figure(s); 5 Drawing Page(s)  
LINE COUNT: 1677

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Disclosed are novel thermostable trehalose-releasing enzyme, and its preparations and uses. The enzyme is obtainable from the culture of microorganisms such as Sulfolobus acidocaldarius (ATCC 33909 and ATCC 49426) and Sulfolobus solfataricus (ATCC 35091 and ATCC 35092), and capable of hydrolyzing at a temperature of over 55.degree. C. the linkage between a trehalose moiety and the remaining glycosyl moiety in a non-reducing saccharide having a trehalose structure as an end unit and having a degree of glucose polymerization of 3 or higher. Trehalose and compositions containing the same are extensively useful in food products, cosmetics and pharmaceuticals.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 10 OF 27 USPATFULL on STN

ACCESSION NUMBER: 2000:142138 USPATFULL <<LOGINID::20060611>>

TITLE: Method of producing saccharide preparations

INVENTOR(S): Liaw, Gin C., Decatur, IL, United States  
Pedersen, Sven, Gentofte, Denmark  
Hendriksen, Hanne Vang, Holte, Denmark  
Svendsen, Allan, Birkerød, Denmark  
Nielsen, Bjarne Rolf, Virum, Denmark  
Nielsen, Ruby Illum, Farum, Denmark

PATENT ASSIGNEE(S): Novo Nordisk A/S, Bagsvaerd, Denmark (non-U.S. corporation)

NUMBER KIND DATE

-----  
PATENT INFORMATION: US 6136571 20001024  
APPLICATION INFO.: US 2000-499531 20000210 (9)  
RELATED APPLN. INFO.: Continuation of Ser. No. US 1998-198672, filed on 23  
Nov 1998 which is a continuation-in-part of Ser. No. US  
1998-107657, filed on 30 Jun 1998, now abandoned which  
is a continuation-in-part of Ser. No. US 1997-979673,  
filed on 26 Nov 1997, now abandoned

DOCUMENT TYPE: Utility  
FILE SEGMENT: Granted  
PRIMARY EXAMINER: Brunsmann, David  
LEGAL REPRESENTATIVE: Zelson, Esq., Steve T., Lambiris, Esq., Elias J.  
NUMBER OF CLAIMS: 15  
EXEMPLARY CLAIM: 1,8  
NUMBER OF DRAWINGS: 5 Drawing Figure(s); 5 Drawing Page(s)  
LINE COUNT: 1052

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention relates to a method for the production of saccharide preparations, i.e., syrups, by saccharifying a liquefied

starch solution, which method comprises a saccharification step during which step one or more enzymatic saccharification stages takes place, and the subsequent steps of one or more high temperature membrane separation steps, and re-circulation of the saccharification enzyme, in which method the membrane separation steps are carried out as an integral part of the saccharification step. In another specific aspect, the invention provides a method of producing a saccharide preparation, which method comprises an enzymatic saccharification step, and the subsequent steps of one or more high temperature membrane separation steps and re-circulation of the saccharification enzyme.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 11 OF 27 USPATFULL on STN

ACCESSION NUMBER: 2000:134456 USPATFULL <<LOGINID::20060611>>

TITLE: Method of producing saccharide preparations

INVENTOR(S): Liaw, Gin C., Decatur, IL, United States  
Pedersen, Sven, Gentofte, Denmark  
Hendriksen, Hanne Vang, Holte, Denmark  
Svendsen, Allan, Birkerød, Denmark  
Nielsen, Bjarne Rolf, Virum, Denmark  
Nielsen, Ruby Illum, Farum, Denmark

PATENT ASSIGNEE(S): Novo Nordisk A/S, Bagsvaerd, Denmark (non-U.S. corporation)

NUMBER KIND DATE

-----  
PATENT INFORMATION: US 6129788 20001010  
APPLICATION INFO.: US 1998-198672 19981123 (9)  
RELATED APPLN. INFO.: Continuation of Ser. No. US 1998-107657, filed on 30  
Jun 1998, now abandoned which is a continuation of Ser.  
No. US 1997-979673, filed on 26 Nov 1997, now abandoned

DOCUMENT TYPE: Utility  
FILE SEGMENT: Granted  
PRIMARY EXAMINER: Brunsman, David  
LEGAL REPRESENTATIVE: Zelson, Steve T., Lambiris, Elias J.  
NUMBER OF CLAIMS: 16  
EXEMPLARY CLAIM: 1,9  
NUMBER OF DRAWINGS: 5 Drawing Figure(s); 5 Drawing Page(s)  
LINE COUNT: 1248

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention relates to a method for the production of saccharide preparations, i.e., syrups, by saccharifying a liquefied starch solution, which method comprises a saccharification step during which step one or more enzymatic saccharification stages takes place, and the subsequent steps of one or more high temperature membrane separation steps, and recirculation of the saccharification enzyme, in which method the membrane separation steps are carried out as an integral part of the saccharification step.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 12 OF 27 USPATFULL on STN

ACCESSION NUMBER: 2000:102106 USPATFULL <<LOGINID::20060611>>

TITLE: Acid-stable and thermo-stable enzymes derived from  
sulfolobus species

INVENTOR(S): Deweer, Philippe, Aalst, Belgium  
Amory, Antione, Rixensart, Belgium

PATENT ASSIGNEE(S): Genencor International, Inc., Rochester, NY, United States (U.S. corporation)

NUMBER KIND DATE

-----  
PATENT INFORMATION: US 6100073 20000808  
WO 9602633 19960201  
APPLICATION INFO.: US 1997-765939 19970929 (8)  
WO 1995-EP2703 19950707  
19970929 PCT 371 date  
19970929 PCT 102(e) date

NUMBER DATE

PRIORITY INFORMATION: GB 1994-14224 19940714  
DOCUMENT TYPE: Utility  
FILE SEGMENT: Granted  
PRIMARY EXAMINER: Prats, Francisco  
NUMBER OF CLAIMS: 33  
EXEMPLARY CLAIM: 1  
NUMBER OF DRAWINGS: 5 Drawing Figure(s); 5 Drawing Page(s)  
LINE COUNT: 1507

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Novel acid-stable and thermo-stable enzymes having .alpha.-1,4 hydrolytic activity and a .alpha.-1,6 hydrolytic activity which are derived from strains of the genus Sulfolobus. These enzymes are capable of expressing high levels of .alpha.-1,4 hydrolytic activity, including the maximum .alpha.-1,4 hydrolytic activity thereof, at highly acidic pHs of between about 2.5 and about 4.5. These .alpha.-amylases are further capable of expressing high levels of .alpha.-1,4 hydrolytic activity, including the maximum .alpha.-1,4 hydrolytic activity thereof, at high temperatures of between about 90.degree. C. and about 120.degree. C. Particularly disclosed herein are such enzymes which are derived from strains of the species S. acidocaldarius and, in particular, Sulfolobus acidocaldarius DSM 639. Modified starch degradation (liquefaction and saccharification) processes using these novel enzymes are also disclosed herein.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 13 OF 27 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1

ACCESSION NUMBER: 2000:552128 CAPLUS <<LOGINID::20060611>>

DOCUMENT NUMBER: 134:1121

TITLE: Cloning and expression of the gene encoding novel .alpha.-amylase from Sulfolobus shibatae in Escherichia coli

AUTHOR(S): Liu, Li; Chen, Wei; Jin, Cheng

CORPORATE SOURCE: Laboratory of Enzymology, Institute of Microbiology, Chinese Academy of Sciences, Beijing, 100080, Peop. Rep. China

SOURCE: Weishengwu Xuebao (2000), 40(3), 323-326  
CODEN: WSHPA8; ISSN: 0001-6209

PUBLISHER: Kexue Chubanshe

DOCUMENT TYPE: Journal

LANGUAGE: Chinese

AB A novel .alpha.-amylase gene was amplified from Sulfolobus shibatae by using PCR technique. The amplified 1.7 kb DNA fragment was inserted into an expression vector pBV220 to yield the recombinant plasmid pSBAM. The novel .alpha.-amylase gene in pSBAM was expressed in E. coli. The prodn. of the novel .alpha.-amylase activity reached over 8 units/100 mL of the culture. The mol. wt. of this enzyme was about 61 kD by SDS-PAGE. The expressed novel .alpha.- \*\*\*amylase\*\*\* protein in E. coli DH5.alpha. accounted for about 20% of the total protein in the recombinant cell; the cooperative action of the novel .alpha.- \*\*\*amylase\*\*\* and the maltotriigosyltrehalose synthase from \*\*\*Sulfolobus\*\*\* shibatae was investigated and \*\*\*trehalose\*\*\* was detected by using HPLC anal. when using amylose and partial starch hydrolyzates as substrates.

L5 ANSWER 14 OF 27 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:806076 CAPLUS <<LOGINID::20060611>>

DOCUMENT NUMBER: 134:159202

TITLE: Novel glycosyltransferase and .alpha.-amylase: Catalytic mechanism and utilization for trehalose production

AUTHOR(S): Kato, Masaru; Kobayashi, Kazuo

CORPORATE SOURCE: Applied Research Center, Kirin Brewery Co., Ltd., Gunma, 370-1295, Japan

SOURCE: Glycoenzymes (2000), 199-215. Editor(s): Ohnishi, Masatake. Japan Scientific Societies Press: Tokyo, Japan.

CODEN: 69AQDK

DOCUMENT TYPE: Conference; General Review

LANGUAGE: English

AB A review with 33 refs. Amylolytic activity that converts sol. starch to .alpha.,.alpha.-trehalose (trehalose), was found in the cell homogenate of the thermoacidophilic archaeum, *Sulfolobus solfataricus* KMI. A specially developed novel assay method showed two enzymes to be essential for this activity. The enzymes, a glycosyltransferase and an .alpha.-amylase, were purified to homogeneity and characterized. The glycosyltransferase catalyzed the conversion of maltooligosaccharides to glycosyltrehaloses; the .alpha.-amylase catalyzed the liberation of trehalose from glycosyltrehaloses. The mol. wt. of these enzymes was estd. to be 76 kDa and 61 kDa and the optimum temp. were 70-80.degree.C and 70-85.degree.C, resp. Both had high thermostability. Based on an anal. of the reaction products, and an expt. using <sup>18</sup>O-labeled water and <sup>3</sup>H-labeled substrates, it was verified that glycosyltransferase transferred an oligomer segment of maltooligosaccharide to the C1OH position of glucose, located at the reducing end of the parental maltooligosaccharide, to produce a glycosyltrehalose with an intramol. reaction. From the observation of intermol. transglycosylation, the catalytic mechanism of glycosyltransferase appears to be essentially a transglycosylation. Anal. of the reaction products, and exptl. findings using <sup>3</sup>H-labeled substrates indicated that the .alpha.-amylase hydrolyzed only the .alpha.-1,4 glucosidic linkage adjacent to the trehalose unit of the glycosyltrehaloses. The reactivity of .alpha.-amylase to glycosyltrehaloses was about 15 times greater than that to maltooligosaccharides. Comparison of mol. binding affinities between maltooligosaccharides and glycosyltrehaloses suggested that the subsite affinity at subsite 1 of the .alpha.-amylase (located at the reducing end side) for both substrates was a very important determinant of reactivity. The yield of trehalose from starch was almost 80% using these two enzymes.

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 15 OF 27 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 1999:569905 CAPLUS <<LOGINID::20060611>>

DOCUMENT NUMBER: 131:285460

TITLE: High level production of thermostable .alpha.-amylase from *Sulfolobus solfataricus* in high-cell density culture of the food yeast *Candida utilis*

AUTHOR(S): Miura, Yutaka; Kettoku, Masako; Kato, Masaru; Kobayashi, Kazuo; Kondo, Keiji

CORPORATE SOURCE: Central Laboratories for Key Technology, Kirin Brewery Co., Ltd., Yokohama, 236-0004, Japan

SOURCE: Journal of Molecular Microbiology and Biotechnology (1999), 1(1), 129-134  
CODEN: JMMBFF; ISSN: 1464-1801

PUBLISHER: Horizon Scientific Press

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The .alpha.- \*\*\*amylase\*\*\* from \*\*\**Sulfolobus*\*\*\* solfataricus has the com. important ability to hydrolyze glycosyltrehalose and can be used for the prodn. of \*\*\*trehalose\*\*\* from sol. starch. The authors have produced this enzyme in the food yeast *Candida utilis* at extremely high levels. Because the *S. solfataricus* gene was previously shown to be very poorly expressed, the gene was resynthesized based on codons preferentially found in the highly expressed *C. utilis* glyceraldehyde-3-phosphate dehydrogenase (GAP) gene. Expression of this synthetic gene under the control of the GAP promoter yielded biol. active .alpha.-amylase, accounting for more than 50% of the sol. protein. Comparison of the expression levels of various chimeric constructs of the synthetic and native genes indicated that the prodn. level of the .alpha.-amylase was improved more than 2.times.10<sup>4</sup>-fold by substituting the native gene with the synthesized one. Northern anal. revealed the formation of short mRNAs in transformants with constructs contg. native gene fragments, suggesting that premature termination of the transcripts is responsible for the low prodn. level. The .alpha.-amylase-producing *C. utilis* cells were grown up to 92 g dry cell wt. per L in a synthetic medium, yielding 12.3 g/l .alpha.-amylase which accounts for up to 27% of total cell proteins.

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 16 OF 27 CAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1998:662360 CAPLUS <<LOGINID::20060611>>  
 DOCUMENT NUMBER: 129:241775  
 TITLE: Recombinant thermostable enzyme which releases  
 trehalose from non-reducing saccharide  
 INVENTOR(S): Mitsuzumi, Hitoshi; Kubota, Michio; Sugimoto,  
 Toshiyuki  
 PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo,  
 Japan  
 SOURCE: Pat. Specif. (Aust.), 69 pp.  
 CODEN: ALXXAP  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

| PATENT NO.             | KIND | DATE           | APPLICATION NO. | DATE       |
|------------------------|------|----------------|-----------------|------------|
| AU 690285              | B2   | 19980423       | AU 1995-27131   | 19950721   |
| AU 9527131             | A1   | 19960201       |                 |            |
| JP 08336388            | A2   | 19961224       | JP 1995-189760  | 19950704   |
| JP 3557289             | B2   | 20040825       |                 |            |
| US 6027918             | A    | 20000222       | US 1997-798269  | 19970211   |
| US 6346394             | B1   | 20020212       | US 1998-55210   | 19980406   |
| PRIORITY APPLN. INFO.: |      |                | JP 1994-190180  | A 19940721 |
|                        |      | JP 1995-190128 | A 19950411      |            |
|                        |      | JP 1995-189760 | A 19950704      |            |
|                        |      | JP 1995-109128 | A 19950411      |            |
|                        |      | US 1995-505377 | A3 19950721     |            |
|                        |      | US 1997-798269 | A1 19970211     |            |

AB Disclosed is a recombinant thermostable enzyme which has a mol. wt. of about 54,000-64,000 daltons and a pl of about 5.6-6.6, and releases trehalose from non-reducing saccharides having a trehalose structure as an end unit and a degree of glucose polymn. of at least 3. The enzyme has a satisfactorily high thermostability, i.e., it is not substantially inactivated even when incubated in an aq. soln. (pH 7.0) at 85.degree.C for 60 min, and this facilitates the prodn. of trehalose on an industrial scale and in a satisfactorily high yield. Enzyme was purified from recombinant microorganisms expressing the gene for Sulfolobus acidocaldarius ATCC 33909 .alpha.-amylase. This enzyme was used to prep. trehalose-contg. syrup or powder from corn, tapioca or potato starch. The syrup or powder can be used in food, pharmaceuticals and cosmetics.

L5 ANSWER 17 OF 27 USPATFULL on STN  
 ACCESSION NUMBER: 1998:22090 USPATFULL <<LOGINID::20060611>>  
 TITLE: Thermostable trehalose-releasing enzyme, and its  
 preparation and uses  
 INVENTOR(S): Ikegami, Shouji, Okayama, Japan  
 Kubota, Michio, Okayama, Japan  
 Sugimoto, Toshiyuki, Okayama, Japan  
 Miyake, Toshio, Okayama, Japan  
 PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo,  
 Okayama, Japan (non-U.S. corporation)

| NUMBER              | KIND           | DATE         |
|---------------------|----------------|--------------|
| PATENT INFORMATION: | US 5723327     | 19980303     |
| APPLICATION INFO.:  | US 1995-485132 | 19950607 (8) |

| NUMBER                | DATE                    |
|-----------------------|-------------------------|
| PRIORITY INFORMATION: | JP 1994-166126 19940625 |
|                       | JP 1995-109130 19950411 |
| DOCUMENT TYPE:        | Utility                 |
| FILE SEGMENT:         | Granted                 |
| PRIMARY EXAMINER:     | Lankford, Jr., Leon B.  |
| ASSISTANT EXAMINER:   | Prats, Francisco C.     |
| LEGAL REPRESENTATIVE: | Browdy and Neimark      |
| NUMBER OF CLAIMS:     | 15                      |

EXEMPLARY CLAIM: 1  
NUMBER OF DRAWINGS: 5 Drawing Figure(s); 5 Drawing Page(s)  
LINE COUNT: 1775

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Disclosed are novel thermostable trehalose-releasing enzyme, and its preparations and uses. The enzyme is obtainable from the culture of microorganisms such as *Sulfolobus acidocaldarius* (ATCC 33909 and ATCC 49426) and *Sulfolobus solfataricus* (ATCC 35091 and ATCC 35092), and capable of hydrolyzing at a temperature of over 55.degree. C. the linkage between a trehalose moiety and the remaining glycosyl moiety in a non-reducing saccharide having a trehalose structure as an end unit and having a degree of glucose polymerization of 3 or higher. Trehalose and compositions containing the same are extensively useful in food products, cosmetics and pharmaceuticals.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 18 OF 27 USPATFULL on STN  
ACCESSION NUMBER: 1998:11912 USPATFULL <<LOGINID::20060611>>

TITLE: Thermostable non-reducing saccharide-forming enzyme its production and uses

INVENTOR(S): Nakada, Tetsuya, Okayama, Japan  
Chaen, Hiroto, Okayama, Japan  
Sugimoto, Toshiyuki, Okayama, Japan  
Miyake, Toshio, Okayama, Japan

PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo,  
Okayama, Japan (non-U.S. corporation)

NUMBER KIND DATE

PATENT INFORMATION: US 5714368 19980203  
APPLICATION INFO.: US 1995-466434 19950606 (8)

NUMBER DATE

PRIORITY INFORMATION: JP 1994-166011 19940624

DOCUMENT TYPE: Utility

FILE SEGMENT: Granted

PRIMARY EXAMINER: Lankford, Jr., Leon B.

ASSISTANT EXAMINER: Prats, Francisco C.

LEGAL REPRESENTATIVE: Browdy and Neimark

NUMBER OF CLAIMS: 23

EXEMPLARY CLAIM: 1

NUMBER OF DRAWINGS: 4 Drawing Figure(s); 4 Drawing Page(s)

LINE COUNT: 1534

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Disclosed are novel thermostable non-reducing saccharides-forming enzyme, its preparation and uses. The enzyme is obtainable from the culture of microorganisms such as *Sulfolobus acidocaldarius* (ATCC 33909 and ATCC 49426) and *Sulfolobus solfataricus* (ATCC 35091 and ATCC 35092), and capable of forming non-reducing saccharides having a trehalose structure as an end unit when allowed to act on reducing partial starch hydrolysates at a temperature of over 55.degree. C. Glucoamylase and .alpha.-glucosidase readily yield trehalose when allowed to act on the non-reducing saccharides. These non-reducing saccharides and trehalose are extensively useful in food products, cosmetics and pharmaceuticals.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 19 OF 27 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 3

ACCESSION NUMBER: 1997:276006 CAPLUS <<LOGINID::20060611>>

DOCUMENT NUMBER: 126:279243

TITLE: Production of trehalose from starch by novel  
trehalose-producing enzymes from *Sulfolobus*  
*solfataricus* KMI

AUTHOR(S): Kobayashi, Kazuo; Komeda, Toshihiro; Miura, Yutaka;  
Kettoku, Masako; Kato, Masaru

CORPORATE SOURCE: Applied Bioresearch Cent., Kirin Brewery Co. Ltd.,  
Gunma, 370-12, Japan

SOURCE: Journal of Fermentation and Bioengineering (1997),

83(3), 296-298

CODEN: JFBIEX; ISSN: 0922-338X

PUBLISHER: Society for Fermentation and Bioengineering, Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A new process for \*\*\*trehalose\*\*\* (I) prodn. from starch (II) was developed using a novel glycosyltransferase and a novel .alpha.-\*\*\*amylase\*\*\* from \*\*\*Sulfolobus\*\*\* solfataricus KM1. The yield of I from II was 81.5% using the 2 enzymes and a thermostable debranching enzyme. I prodn. was carried out at high temp. (.apprx.60.degree.) and at a high concn. of II with no risk of contamination by microorganisms or retrogradation of II.

L5 ANSWER 20 OF 27 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:209939 CAPLUS <<LOGINID::20060611>>

DOCUMENT NUMBER: 124:252731

TITLE: Sulfolobus acidocaldarius thermostable enzyme forms trehalose-containing non-reducing saccharide from reducing amylaceous saccharide and recombinant enzyme use in saccharification and sweetener or syrup manufacture

INVENTOR(S): Maruta, Kazuhiko; Kubota, Michio; Sugimoto, Toshiyuki

PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan

SOURCE: Can. Pat. Appl., 67 pp.

CODEN: CPXXEB

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.  | KIND | DATE     | APPLICATION NO.  | DATE        |
|---|------|----------|------------------|-------------|
| CA 2154307  | AA   | 19960122 | CA 1995-2154307  | 19950720    |
| JP 08084586                                       | A2   | 19960402 | JP 1995-189706   | 19950704    |
| JP 3557288  | B2   | 20040825 |                  |             |
| AU 9527132  | A1   | 19960201 | AU 1995-27132    | 19950721    |
| AU 690698   | B2   | 19980430 |                  |             |
| EP 709461   | A1   | 19960501 | EP 1995-305101   | 19950721    |
| EP 709461   | B1   | 19980930 |                  |             |
| R: AT, BE, CH, DE, DK, ES, FR, GB, IT, LI, NL, SE |      |          |                  |             |
| AT 171727   | E    | 19981015 | AT 1995-305101   | 19950721    |
| US 5976856  | A    | 19991102 | US 1995-505448   | 19950721    |
| TW 432112   | B    | 20010501 | TW 1995-84107700 | 19950725    |
| US 5922578  | A    | 19990713 | US 1997-840236   | 19970411    |
| US 2002102696                                     | A1   | 20020801 | US 1999-419305   | 19991015    |
| PRIORITY APPLN. INFO.: JP 1994-190183 A 19940721  |      |          |                  |             |
|   |      |          | JP 1995-189706   | A 19950704  |
|   |      |          | US 1995-505448   | A3 19950721 |

AB Disclosed is a recombinant thermostable enzyme which has a mol. wt. of about 69,000-79,000 daltons and a pI of about 5.4.-6.4, and forms non-reducing saccharides having a trehalose structure as an end unit from reducing amylaceous saccharides having a degree of glucose polymn. of at least 3. The enzyme has satisfactorily high thermostability, i.e. it is substantially not inactivated even when incubated in an aq. soln. (pH 7.0) at 85.degree.C for 60 min, and this facilitates the prodn. of such non-reducing saccharides on an industrial scale and in a satisfactorily-high yield.

L5 ANSWER 21 OF 27 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 4

ACCESSION NUMBER: 1996:736480 CAPLUS <<LOGINID::20060611>>

DOCUMENT NUMBER: 126:15438

TITLE: Gene cloning and expression of new trehalose-producing enzymes from the hyperthermophilic archaeum Sulfolobus solfataricus KM1

AUTHOR(S): Kobayashi, Kazuo; Kato, Masaru; Miura, Yutaka;

Kettoku, Masako; Komeda, Toshihiro; Iwamatsu, Akihiro

CORPORATE SOURCE: Applied Bioresearch Center, Kirin Brewery Co. Ltd., Gunma, 370-12, Japan

SOURCE: Bioscience, Biotechnology, and Biochemistry (1996),

60(11), 1882-1885  
 CODEN: BBBIEJ; ISSN: 0916-8451  
 PUBLISHER: Japan Society for Bioscience, Biotechnology, and  
 Agrochemistry  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB The genes encoding \*\*\*trehalose\*\*\* -producing enzymes, a glycosyl-  
 \*\*\*trehalose\*\*\* -producing enzyme (glycosyltransferase) and a  
 glycosyltrehalose-hydrolyzing enzyme (.alpha.- \*\*\*amylase\*\*\* ), from  
 \*\*\*Sulfolobus\*\*\* solfataricus KM1 were cloned and expressed in E. coli.  
 The nucleotide sequence of the glycosyltransferase gene and the  
 .alpha.-amylase gene indicated proteins with lengths of 728 and 558 amino  
 acids and mol. masses of 86-kDa and 65 kDa, resp. Regions highly  
 conserved in the .alpha.-amylase family exist in the amino acid sequences  
 of these enzymes.  
 REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS  
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 22 OF 27 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS RESERVED.  
 on STN DUPLICATE 5

ACCESSION NUMBER: 1996-0406572 PASCAL <<LOGINID::20060611>>  
 COPYRIGHT NOTICE: Copyright .COPYRGT. 1996 INIST-CNRS. All rights  
 reserved.  
 TITLE (IN ENGLISH): Reaction mechanism of a new glycosyltrehalose-  
 hydrolyzing enzyme isolated from the hyperthermophilic  
 archaeum, Sulfolobus solfataricus KM1  
 AUTHOR: KATO M.; MIURA Y.; KETTOKU M.; KOMEDA T.; IWAMATSU A.;  
 KOBAYASHI K.  
 CORPORATE SOURCE: Applied Bioresearch, Kirin Brewery Co., Ltd., 3  
 Miyaharacho, Takasakishi, Gunma 370-12, Japan  
 SOURCE: Bioscience, biotechnology, and biochemistry, (1996),  
 60(5), 925-928, 15 refs.  
 ISSN: 0916-8451

DOCUMENT TYPE: Journal  
 BIBLIOGRAPHIC LEVEL: Analytic  
 COUNTRY: Japan  
 LANGUAGE: English  
 AVAILABILITY: INIST-8935, 354000060616350450  
 AN 1996-0406572 PASCAL <<LOGINID::20060611>>  
 CP Copyright .COPYRGT. 1996 INIST-CNRS. All rights reserved.  
 AB Amylolytic activity, which converts soluble starch to .alpha.,.alpha.-  
 \*\*\*trehalose\*\*\* ( \*\*\*trehalose\*\*\* ), was found in the cell homogenate  
 of the hyperthermophilic acidophilic archaeum, \*\*\*Sulfolobus\*\*\*  
 solfataricus KM1. Two enzymes, a glycosyltransferase and an .alpha.-  
 \*\*\*amylase\*\*\* , which were essential for this activity were identified.  
 The .alpha.- \*\*\*amylase\*\*\* was purified to homogeneity on SDS-PAGE.  
 The .alpha.- \*\*\*amylase\*\*\* catalyzed the hydrolysis of  
 glycosyltrehaloses to \*\*\*trehalose\*\*\* . Analysis of the reaction  
 products, kinetic parameters, and experimental findings using  
 .sup.3H-labeled substrates indicated that the .alpha.- \*\*\*amylase\*\*\*  
 hydrolyzed only the .alpha.-1,4 glucosidic linkage adjacent to the  
 \*\*\*trehalose\*\*\* unit of the glycosyltrehaloses. Six strains of the  
 Sulfolobaceae family examined were observed to have the  
 glycosyltrehalose-hydrolyzing enzyme, the .alpha.- \*\*\*amylase\*\*\* .

L5 ANSWER 23 OF 27 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS RESERVED.  
 on STN DUPLICATE 6

ACCESSION NUMBER: 1996-0406409 PASCAL <<LOGINID::20060611>>  
 COPYRIGHT NOTICE: Copyright .COPYRGT. 1996 INIST-CNRS. All rights  
 reserved.  
 TITLE (IN ENGLISH): Reaction mechanism of a new glycosyltrehalose-  
 producing enzyme isolated from the hyperthermophilic  
 archaeum, Sulfolobus solfataricus KM1  
 AUTHOR: KATO M.; MIURA Y.; KETTOKU M.; SHINDO K.; IWAMATSU A.;  
 KOBAYASHI K.  
 CORPORATE SOURCE: Applied Bioresearch Center, Kirin Brewery Co., Ltd., 3  
 Miyaharacho, Takasakishi, Gunma 370-12, Japan  
 SOURCE: Bioscience, biotechnology, and biochemistry, (1996),  
 60(5), 921-924, 15 refs.  
 ISSN: 0916-8451

DOCUMENT TYPE: Journal  
BIBLIOGRAPHIC LEVEL: Analytic  
COUNTRY: Japan  
LANGUAGE: English  
AVAILABILITY: INIST-8935, 354000060616350440  
AN 1996-0406409 PASCAL <<LOGINID::20060611>>  
CP Copyright .COPYRGT. 1996 INIST-CNRS. All rights reserved.  
AB An amylolytic activity, which converts soluble starch to .alpha.,.alpha.-  
\*\*\*trehalose\*\*\* ( \*\*\*trehalose\*\*\* ), was found in the cell homogenate  
of the hyperthermophilic, acidophilic archaeum \*\*\*Sulfolobus\*\*\*  
solfataricus KM1. Two enzymes, a glycosyltransferase and an  
\*\*\*amylase\*\*\*, which are essential for this activity, were purified to  
homogeneity. A glycosyltransferase catalyzed the conversion of  
maltooligosaccharides to glycosyltrehaloses. Based on a detailed analysis  
of the reaction products, kinetic parameters, and an experiment using  
.sup.3H-labeled substrates, it was verified that glycosyltransferase  
transferred an oligomer segment of maltooligosaccharide to the Cl-OH  
position of glucose, located at the reducing end of the  
maltooligosaccharide, to produce a glycosyltrehalose having an  
.alpha.-1,1 linkage. The reaction appears to be intramolecular. Nine  
strains of the Sulfolobaceae family were found to have  
glycosyltransferases.

L5 ANSWER 24 OF 27 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 7

ACCESSION NUMBER: 1996:198380 CAPLUS <<LOGINID::20060611>>  
DOCUMENT NUMBER: 124:282714  
TITLE: Purification and characterization of new  
trehalose-producing enzymes isolated from the  
hyperthermophilic archae, Sulfolobus solfataricus KM1  
AUTHOR(S): Kato, Masaru; Miura, Yutaka; Kettoku, Masako; Shindo,  
Kazutoshi; Iwamatsu, Akihiro; Kobayashi, Kazuo  
CORPORATE SOURCE: Applied Bioresearch Center, Kirin Brewery Co., Ltd.,  
Gunma, 370-12, Japan  
SOURCE: Bioscience, Biotechnology, and Biochemistry (1996),  
60(3), 546-50  
CODEN: BBBIEJ; ISSN: 0916-8451  
PUBLISHER: Japan Society for Bioscience, Biotechnology, and  
Agrochemistry  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB An amylolytic activity that converts sol. starch to .alpha.,.alpha.-  
trehalose (trehalose), was found in the cell homogenate of the  
hyperthermophilic acidophilic archae, S. solfataricus KM1. DEAE-Toyopearl  
650S chromatog. of the homogenate as well as other new reliable assay  
methods showed 2 enzymes to be essential for this activity. These  
enzymes, a glycosyltransferase (maltooligosyltrehalose synthase) (I) and  
an amylase, (maltooligosyltrehalose trehalohydrolase) (II) were purified  
to homogeneity and characterized. Their mol. wts. were 76 and 61 kDa and  
activities were maximal at 70-80 and 70-85.degree., resp. High  
thermostability was noted for each. The reaction products of I and II  
enzymes on amylooligosaccharides were identified by 1H and 13C NMR spectra  
and HPLC anal. The cooperative mechanism of the 2 enzymes was used in a  
new enzymic pathway for trehalose synthesis from starch.

L5 ANSWER 25 OF 27 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:485501 CAPLUS <<LOGINID::20060611>>  
DOCUMENT NUMBER: 125:188959  
TITLE: Production of trehalose by new trehalose-producing  
enzymes from the archae  
AUTHOR(S): Kobayashi, Kazuo; Kettoku, Masako; Miura, Yutaka;  
Kato, Masaru; Komeda, Toshihiro; Iwamatsu, Akihiro  
CORPORATE SOURCE: Appl. Bioresearch Cent., Kirin Brew. Co., Ltd.,  
Takasaki, 370-12, Japan  
SOURCE: Oyo Toshitsu Kagaku (1996), 43(2), 203-211  
CODEN: OTKAE3; ISSN: 1340-3494  
PUBLISHER: Nippon Oyo Toshitsu Kagakkai  
DOCUMENT TYPE: Journal; General Review  
LANGUAGE: Japanese  
AB A review with 13 refs. on \*\*\*trehalose\*\*\* prodn. by \*\*\*Sulfolobus\*\*\*  
solfataricus, the mechanism of \*\*\*trehalose\*\*\* formation,

\*\*\*trehalose\*\*\* -producing enzymes, glycosyltransferase, .alpha.-  
 \*\*\*amylase\*\*\*, purifn. of these enzymes, physicochem. properties and  
 substrate specificities of these enzymes, gene anal. of these enzymes,  
 cooperative enzymic prodn. of \*\*\*trehalose\*\*\* from various substrates,  
 and new prodn. method of .alpha.,.alpha.- \*\*\*trehalose\*\*\* from starch.

L5 ANSWER 26 OF 27 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 8

ACCESSION NUMBER: 1996:121151 CAPLUS <<LOGINID::20060611>>

DOCUMENT NUMBER: 124:169384

TITLE: Cloning and expression of genes for novel transferase  
 and amylase of Sulfolobus and uses of the enzymes for  
 preparing oligosaccharides

INVENTOR(S): Kato, Masaru; Miura, Yutaka; Kettoku, Masako;  
 Iwamatsu, Akihiro; Kobayashi, Kazuo; Komeda, Toshihiro

PATENT ASSIGNEE(S): Kirin Beer K K, Japan

SOURCE: PCT Int. Appl., 357 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.   | KIND | DATE     | APPLICATION NO. | DATE     |
|--|------|----------|-----------------|----------|
| WO 9534642   | A1   | 19951221 | WO 1995-JP1189  | 19950614 |
| W: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI,<br>GB, GE, HU, IS, JP, KE, KG, KR, KZ, LK, LR, LT, LU, LV, MD, MG,<br>MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM,<br>TT, UA |      |          |                 |          |
| RW: KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT,<br>LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE,<br>SN, TD, TG   |      |          |                 |          |
| AU 9526824   | A1   | 19960105 | AU 1995-26824   | 19950614 |
| EP 764720  | A1   | 19970326 | EP 1995-921965  | 19950614 |
| EP 764720  | B1   | 20051214 |                 |          |
| R: CH, DE, DK, FR, GB, IT, LI  |      |          |                 |          |
| EP 1130101   | A2   | 20010905 | EP 2000-125389  | 19950614 |
| EP 1130101   | A3   | 20041201 |                 |          |
| R: CH, DE, DK, FR, GB, IT, LI  |      |          |                 |          |
| US 6391595   | B1   | 20020521 | US 1999-298924  | 19990426 |
| US 2004175814  | A1   | 20040909 | US 2003-688276  | 20031020 |
| PRIORITY APPLN. INFO.: JP 1994-133354 A 19940615   |      |          |                 |          |
| JP 1994-194223 A 19940818  |      |          |                 |          |
| JP 1994-290394 A 19941031  |      |          |                 |          |
| JP 1994-286917 A 19941121  |      |          |                 |          |
| JP 1994-311185 A 19941121  |      |          |                 |          |
| JP 1995-120673 A 19950421  |      |          |                 |          |
| EP 1995-921965 A3 19950614   |      |          |                 |          |
| WO 1995-JP1189 W 19950614  |      |          |                 |          |
| US 1997-750569 A3 19970224   |      |          |                 |          |
| US 1999-298924 A1 19990426   |      |          |                 |          |
| US 2000-695423 B1 20001025   |      |          |                 |          |

AB Provided is a novel transferase exhibiting substrate specificity on a  
 saccharide (higher than trisaccharide) having .gtoreq.3 glucose residues  
 with .alpha.-1,4 linkages at its reducing end. The transferase is able to  
 convert the .alpha.-1,4 linkages to .alpha.-1, .alpha.-1 linkages. Also  
 provided is a novel amylase exhibiting substrate specificity on a  
 saccharide (higher than trisaccharide) having .gtoreq.3 glucose residues,  
 which exhibit an .alpha.-1,.alpha.-1 linkage between the 1st and 2nd  
 residues and an .alpha.-1,4 linkage between the 2nd and 3rd residues, at  
 its reducing end. The amylase is able to produce .alpha.,.alpha.-trehalose  
 from the substrates by hydrolyzing the .alpha.-1,4 linkage. The amylase  
 is also able to hydrolyze intra-mol. .alpha.-1,4 linkages to produce mono-  
 and di-saccharides. The gene encoding the amylase is also isolated and a  
 process for producing .alpha.,.alpha.-trehalose using the above described  
 transferase and the amylase are also disclosed. The gene encoding the  
 transferase and the amylase of both Sulfolobus solfataricus strain KM1 and  
 S. acidocaldarius strain ATCC 33909 are isolated and a process for  
 producing oligosaccharides using the enzymes is disclosed.

L5 ANSWER 27 OF 27 CAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1992:422222 CAPLUS <<LOGINID::20060611>>  
DOCUMENT NUMBER: 117:22222  
TITLE: Thermostable amylolytic activity from *Sulfolobus*  
solfataricus  
AUTHOR(S): Lama, Licia; Nicolaus, Barbara; Trinone, Antonio;  
Morzillo, Pasqualina; Calandrelli, Valeria;  
Gambacorta, Agata  
CORPORATE SOURCE: Ist. Chim. Mol. Interesse Biol., Arco Felice, Italy  
SOURCE: Biotech Forum Europe (1991), 8(4), 201-3  
CODEN: BFOEEW; ISSN: 0938-7501  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB An amylolytic enzyme (I) from the thermophilic archaeobacterium *S.*  
*solfataricus* converted glycogen to glucose and converted sol. starch,  
amylose, and amylopectin to a mixt. of glucose and trehalose. I was  
purified 8-fold from the cytoplasmic fraction by successive pptn. with  
(NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> and Me<sub>2</sub>CO. I was optimally active at 70.degree. and pH 5.5, and  
was inhibited by Cu<sup>2+</sup> and Zn<sup>2+</sup>. An intramol. coordinate mechanism appears  
responsible for trehalose formation.

=> d his

L1 QUE AMYLASE

L2 182875 S L1

L3 455 S TREHALOSE(S)L2

L4 46 S SULFOLOBUS (S)L3

L5 27 DUP REM L4 (19 DUPLICATES REMOVED)

L6 2 S SULFOLOBALES (S)L4

L7 2 S L5 (S)L6

=> log y